

Grade 10 Academic Science
Earth's Dynamic Climate ISU
Textbook: Pearson Investigating Science 10

C Layer: Knowledge and Understanding

Students must demonstrate an understanding of the topics by completing one activity for each topic from the list below. All students must complete a minimum of **one** activity from each category. All students must also complete a Summary Concept Map which includes all curriculum expectation topics. Students can achieve a maximum of 70% for thorough completion of these activities.

Category	Activity
1	flash-cards, glossary of terms, crossword
2	notes with labeled diagrams, quiz with answers, worksheet with answers
3	view and summarize (including url) a video or computer simulation/animation

Curriculum Expectation	Topic	Page Reference
3.1	Weather vs. Climate	260 - 262
	Sun's effect on weather	264
	Earth sphere's	264 - 267
	Layers of atmosphere	266
3.2	Albedo effect	278
	Radiation, convection, conduction	279 - 283
	Energy transfer in the atmosphere and effects on weather	280 - 284
	Energy transfer in the hydrosphere	284 - 285
3.3	Natural greenhouse effect	276
	Anthropogenic greenhouse effect	300
3.4	Natural phenomena affecting climate (plate tectonics, weathering/uplift, solar radiance, cosmic rays)	
	Human activities affecting climate	301, 305
3.5/3.6	Types of greenhouse gases, sources and sinks	298 - 302
3.7/3.8	Indicators and effects of climate change	310 - 317

B Layer: Thinking and Investigation

Students may demonstrate their ability to solve problems and conduct inquiry by selecting any **three** topics and completing one activity from each topic chosen. Students can achieve a maximum of 85% for thorough completion of these activities.

Curriculum Expectation	Topic	Activity
2.2	Compare the natural greenhouse effect to the anthropogenic greenhouse effect	design and build a model (ex. C9 on page 287)
		perform an experiment (ex. C12 on page 306)
2.3	Analyze data for evidence of climate change (tree growth ring, ice core sample, lake core sample)	graph and analyze data by creating a historic record of human activities/events, analysis may take the form of: journal, time-line, chain-links, board game, computer game, script
2.4/2.9	Compare and contrast popular hypotheses of climate change by choosing 1 of the top 10 arguments against climate change and reviewing all scientific data that refutes the argument using the website: www.skepticalscience.com/	create a bulletin board display
		create a poster
		write a script for a skit/play/talk show/debate
2.5	Investigate the effects of heat transfer within the hydrosphere and atmosphere	perform an experiment, videotaping your observations and reporting your conclusions (food colouring in beaker heating one end, dyed ice cube melting in water, tub of water heated on overhead projector, smoke box)
		locate and review a simulation/animation, provide the url and summarize the connections to the topic
2.6	Investigate how water in its various states influences climate patterns	locate and review a simulation/animation, provide the url and summarize the connections to the topic
2.7	Investigate the influence of ocean currents on local/global heat transfer and precipitation patterns	locate and review a simulation/animation, provide the url and summarize the connections to the topic
		create a “Community Bulletin” or “What’s Happening” list of weather appropriate local events for the east and west coasts for the winter and summer seasons
		create a persuasive advertisement (brochure, PSA, print) as a travel agent or real estate agent to entice people to visit/move to an area where ocean currents play an influential role on weather patterns
2.8	Investigate the climate of your local region and compare it to other regions in Ontario, Canada, and the world	create a travel itinerary of your local city and three others including: travel dates, clothing, planned activities
		create a scrapbook of a trip from your home town to three other cities including: travel dates, weather conditions, activities

A Layer: Application

Students may demonstrate their ability to transfer their knowledge and make connections by completing any **one** of the following activities. Students can achieve a maximum of 100% for thorough completion of this activity.

Curriculum Expectation	Topic	Activity
1.1/1.2	Analyze current and/or potential effects of climate change and assess the effectiveness of initiatives that address the issue	create a lesson box, legend or advice column for the next inhabitants of our planet so they do not repeat our mistakes (address a minimum of three issues)
		create a speech for a specific political party which explains the parties political platform for addressing climate change
		create an updated version of “An Inconvenient Truth” movie using recent data and observations
		create a written or animated monologue from the point of view of an animal or plant affected by climate change (address a minimum of three issues)